ABSTRACT OF THE DISCLOSURE

A machine has a tool head which rotates on a C-axis (about the Z-axis) and an A-axis (about the X-axis). A tool length vector is multiplied by a matrix whereby a misalignment component δs_{-H} and the incline error (αs_{-H}, βs_{-H}, γs_{-H}) of a spindle are corrected so that the tool length vector due to the misalignment of the spindle is obtained. The vector thus obtained is further multiplied by a transformation matrix that includes a rotation instruction *a* for the A-axis and misalignments of the A-axis δa_{-H} (αa_{-H}, βa_{-H}, γa_{-H}) to correct the misalignment of the A-axis so that the tool length vector as found when the A-axis has rotated by an equivalent of instruction *a* is determined. The vector thus determined is further multiplied by a transformation matrix that includes a rotation instruction *c* for the C-axis and misalignments of the C-axis δac_{-H} (αc_{-H}, βc_{-H}, γc_{-H}) to correct the misalignment of the C-axis, so that a tool length vector as found when the C-axis has rotated by an equivalent of instruction *c* is determined. The tool length vector thus determined is added to the vector of positional instruction values (x, y, z) and a workpiece origin offset vector Mwo_{-H}, so that the machine position Vm_{-H}' is obtained.